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Food Safety
and Inspection
Service

Meat and
Poultry Inspection
Technical Services

Technology Transfer and
Assessment

In Search of New Horizons

Annual Report 1984

United States
Department of
Agriculture



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I. Introduction

The Technology Transfer and Assessment Staff At A Glance

The Technology Transfer and Assessment Staff (TTA):

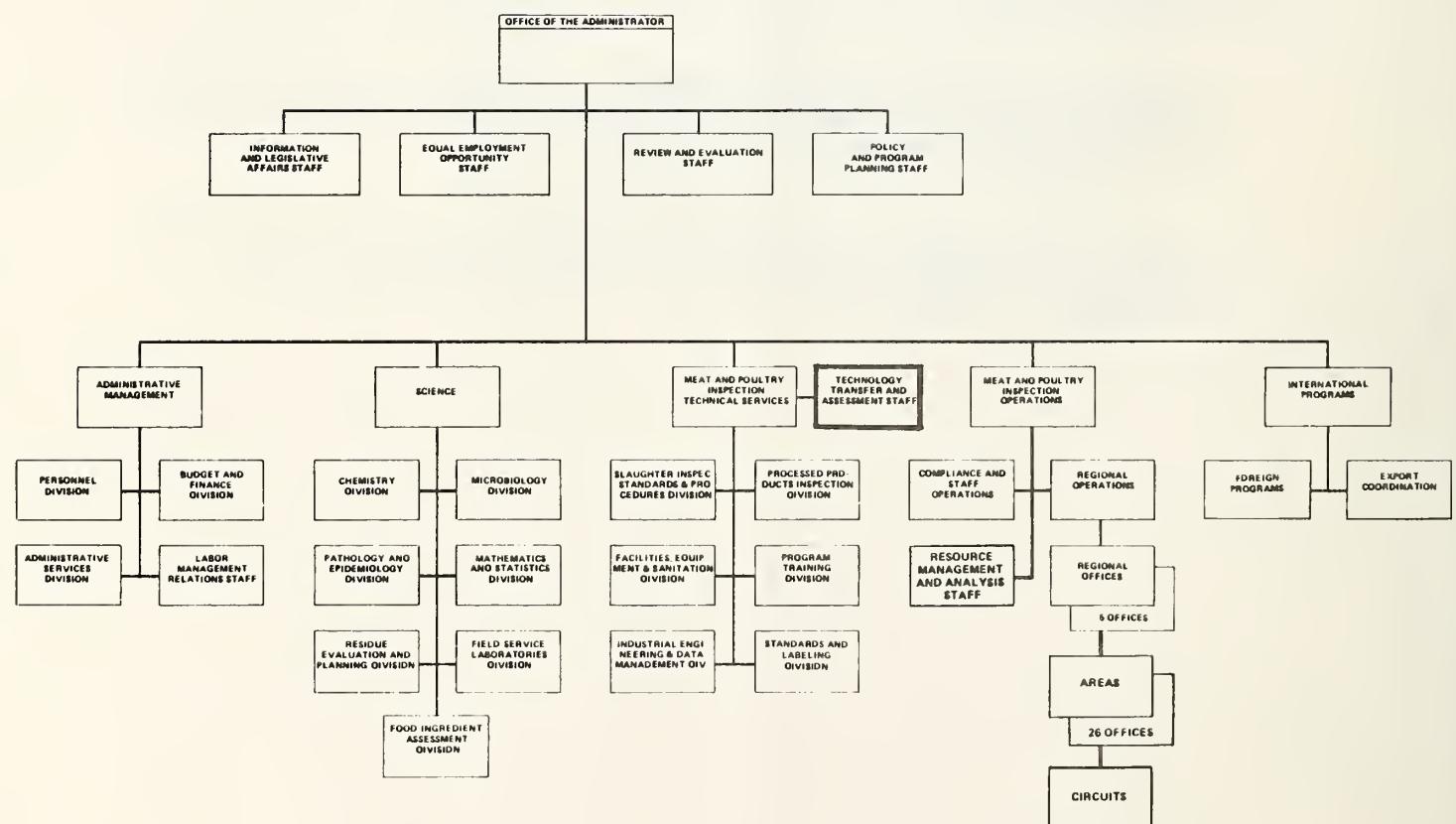
- Gathers information on emerging technologies related to meat and poultry and assesses their potential impact on FSIS.
- Establishes monitoring stations (contact points in industry, academia, and government) as a worldwide network for obtaining information on relevant issues.
- Analyzes findings from conferences, literature searches, and monitoring stations, and communicates their significance to the Agency.
- Publishes the quarterly Memorandum of Screening and Surveillance (MOSS) to report on emerging technological issues.
- Conducts seminars on timely technical issues for the Agency.
- Supports the FSIS Technology Assessment Steering Committee (TASC) by identifying possible topics for assessment, developing issue papers, and coordinating assessment activities.
- Reports to the Deputy Administrator for Meat and Poultry Inspection Technical Services, Food Safety and Inspection Service, U.S. Department of Agriculture.

Organization

The Administrator of what is now the Food Safety and Inspection Service (FSIS) created the Technology Assessment Division (TAD) in 1980. In 1984, the Technology Assessment Division became the Technology Transfer and Assessment Staff (TTA). The name change reflects the activities of the Staff, which include transferring information to the Agency as well as assessing the significance of emerging technologies. The Staff consists of six full-time employees with broad backgrounds in disciplines such as food science and technology, nutrition, and the physical, biological, and environmental sciences.

TTA reports directly to the Deputy Administrator for Meat and Poultry Inspection Technical Services (MPITS). Six divisions, along with TTA, compose Technical Services. MPITS studies the food safety and public health implications of emerging agricultural practices and technology, trains FSIS inspection personnel, develops meat and poultry inspection procedures and product standards, approves product labels, approves facilities and equipment, and compiles data related to meat and poultry inspection. Besides MPITS, four other programs make up the Food Safety and Inspection Service. The chart in Figure 1 shows TTA's position in the FSIS organizational structure.

Fig. 1--Food Safety and Inspection Service



Mission

The Technology Transfer and Assessment Staff tries to stay abreast of, and to anticipate, emerging technologies and trends. TTA assesses the potential impact of issues on FSIS, the meat and poultry industry, or the consumer. Assessment findings and appropriate options are then presented to the Agency. TTA helps develop an awareness in FSIS of issues on the horizon.

TTA strives to fulfill its mission through:

- Actively identifying and maintaining sources of information on meat and poultry research;
- Serving as a clearinghouse for information from a network of domestic and foreign monitoring stations;
- Analyzing scientific, technological, and industrial developments in terms of their relevance to the mission of FSIS; and
- Alerting the Administrator and organizational units in FSIS of significant findings and their potential implications.

TTA identifies subjects to examine through:

- Staff brainstorming sessions;
- Contact with representatives of academia and industry at conferences and at monitoring stations;
- Requests for technical assistance received from scientists and regulation writers in the Agency; or
- Requests from FSIS line management.

TTA selects a subject based on its relevance to the Agency and the resources required to study it. A project under study may involve exploratory meetings with Agency staff, computerized literature searches, and consultation with recognized experts in the field of interest. Upon completing a project, the findings may be reported as a MOSS article, a technology assessment proposal for consideration by TASC, or an internal communication to appropriate Agency units.

II. TTA Year in Review

Overview of Fiscal Year 1984

- Published four issues of the Memorandum of Screening and Surveillance (MOSS).
- Distributed a survey on MOSS to readers.
- Presented ten technical seminars and one workshop.
- Established 31 monitoring stations at universities, trade associations, and research facilities throughout the world.
- Attended 27 scientific conferences and seminars, prepared conference reports, and transferred information to appropriate Agency programs.
- Prepared issue papers on possible technology assessment projects for discussion at two meetings of TASC.
- Provided technical assistance to other Agency units.

Memorandum of Screening and Surveillance (MOSS)

TTA began issuing the quarterly Memorandum of Screening and Surveillance in the spring of 1982. MOSS highlights emerging issues and research related to meat and poultry, and reports findings from literature searches. Most MOSS articles cite scientific references which readers can obtain from TTA. A "Giblets" section in MOSS features short items of general information.

In Volume III, MOSS began to feature papers prepared by members of other units in FSIS. MOSS also included overviews of other Federal agencies (e.g., FDA's CVM, DOC's NMFS) whose activities are relevant to FSIS.

MOSS is now distributed to over 300 readers throughout the Agency and in the scientific and industrial community. Furthermore, a survey of MOSS readers showed that many share their copies with an average of three other people. A breakdown of the MOSS readership by FSIS program is presented in Figure 2. Figure 3 shows the distribution of MOSS readers outside of FSIS.

Fig. 2--MOSS Readers in FSIS

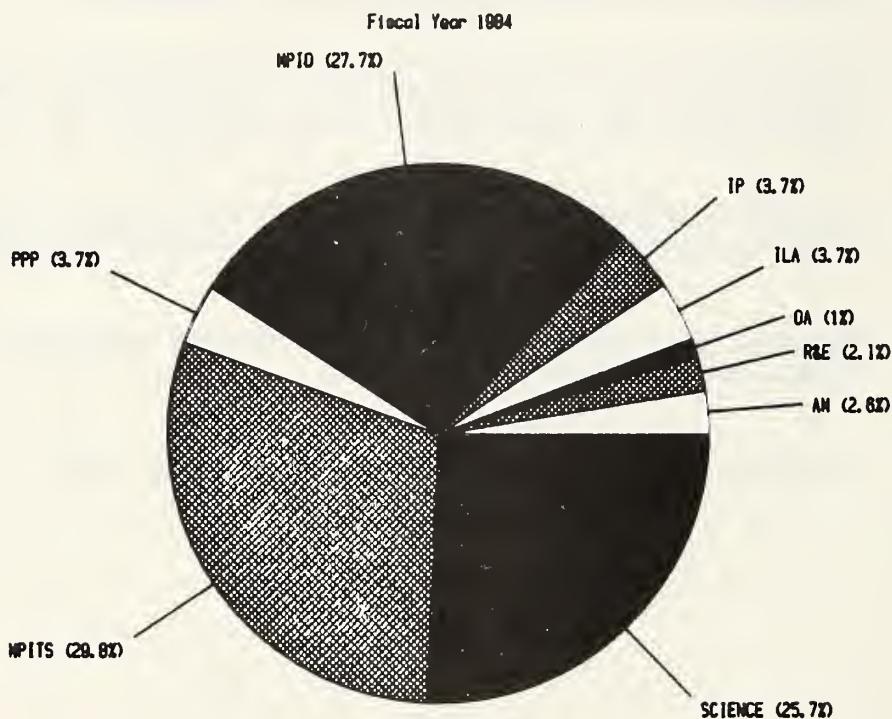
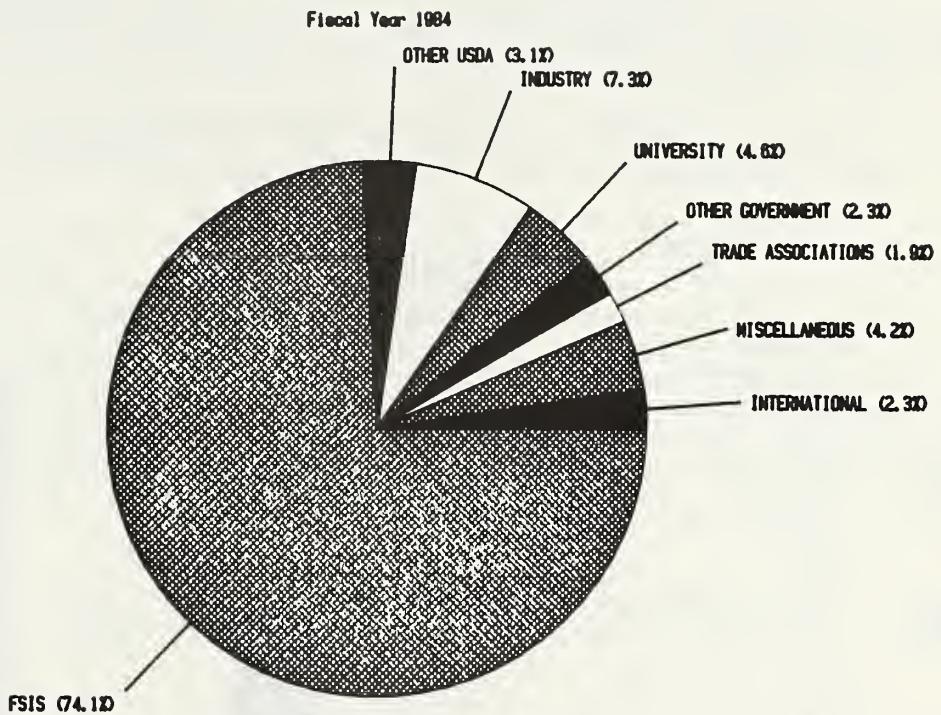


Fig. 3--MOSS Readers



Tables of Contents for MOSS Volumes I-III are given in Appendix 1. Results of the MOSS reader survey were discussed in MOSS III-3. Back issues of this publication can be obtained by contacting TTA.

Seminars

During FY 1984, TTA technical seminars continued to be well attended. TTA began to videotape the seminars for loan to interested parties. Numerous individuals from FSIS and from outside of FSIS have borrowed videotapes.

TTA sponsored a workshop on "The Creative Process," which covered creative thinking and problem solving. Participants evaluated it as being a useful experience, and similar activities may be planned for future years.

A list of FY 1984 seminars and workshops appears in Appendix 2.

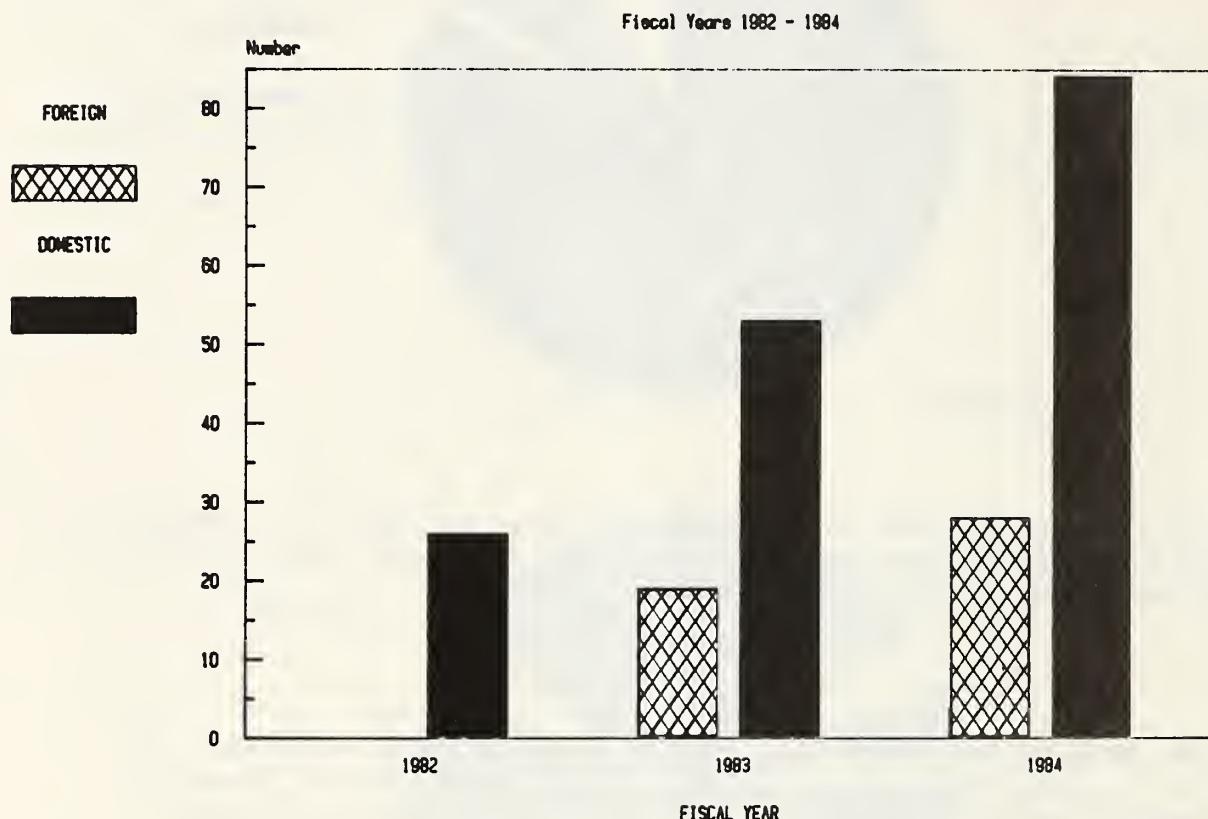
Monitoring Stations

For assessments to be timely, it is critical for TTA to become aware of issues and technologies as they develop. Since 1982, TTA has established monitoring stations as a way to enlist the cooperation of outside individuals to provide information on their areas of subject matter expertise. TTA usually conducts an on-site visit to identify experts at an institution and to discuss the mission and operations of FSIS. Information on the monitoring station, its activities, and technical personnel is obtained and entered into TTA's database. TTA can contact the experts by telephone for consultation as needed. In effect, the monitoring station concept enlarges the information resources capability of TTA.

In FY 1984, TTA actively consulted with several of the existing monitoring stations, and also established new contacts, to obtain information on issues under study. Also, TTA began computerizing the information received from the monitoring stations.

Figure 4 depicts the number of foreign and domestic monitoring stations, by year. TTA's monitoring stations are listed in Appendix 3.

Fig. 4--Monitoring Stations



Conferences

TTA Staff participated in scientific and technical conferences to develop awareness of emerging issues, as well as to maintain contacts with experts in fields of interest to FSIS. Proceedings of conferences, as well as conference reports prepared by attendees, were made available to other units in FSIS.

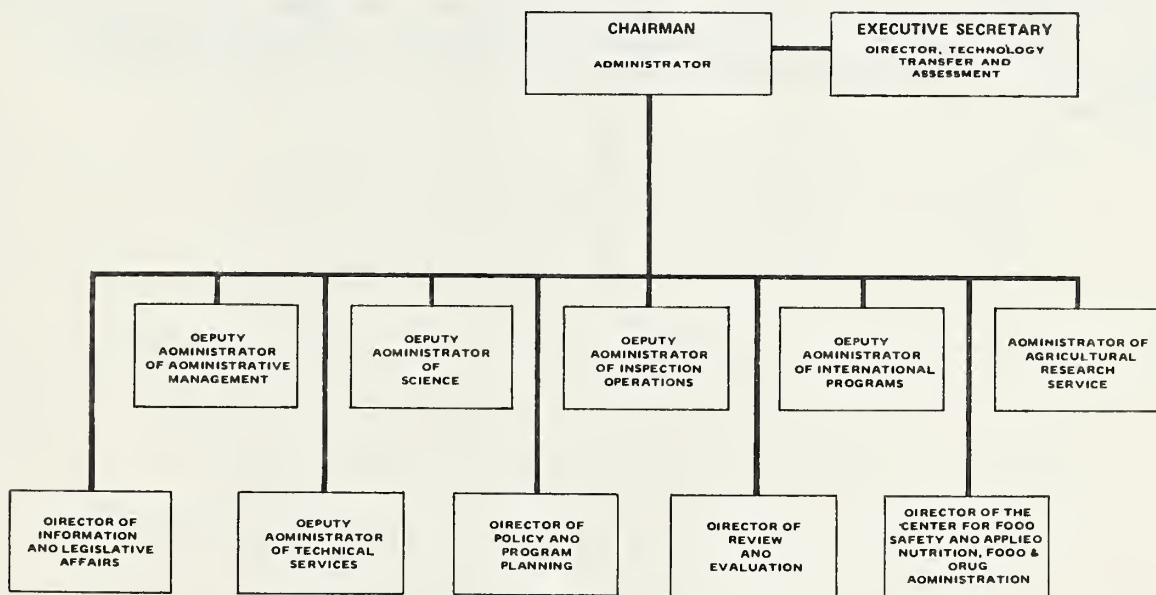
Conferences attended in FY 1984 are listed in Appendix 4.

The Technology Assessment Steering Committee (TASC)

The Administrator of FSIS organized TASC in May 1982 to help ensure that the Agency would respond to issues or emerging technologies that may have significant future implications. Once an issue is identified, TASC is responsible for formulating a course of action, which may include requesting technology assessment.

TASC is chaired by the Administrator of FSIS. The Associate Administrator serves as Chairman in the Administrator's absence. Membership includes the Deputy Administrators of Science, Technical Services, Inspection Operations, International Programs, and Administrative Management, as well as the Directors of the Review and Evaluation, Policy and Program Planning, and Information and Legislative Affairs Staffs. Dr. Terry Kinney, Administrator of the Agricultural Research Service, and Dr. Sanford Miller, Director of FDA's Center for Food Safety and Applied Nutrition, are also members. TTA serves as the Executive Secretariat of TASC (Figure 5). TTA also identifies possible issues to TASC, and advises TASC on assessment procedures.

Fig. 5--Food Safety and Inspection Service
Technology Assessment Steering Committee (TASC)
Membership



TASC met twice in FY 1984. At the first meeting in March, the organization and functions of TASC as proposed by TTA were discussed. TTA presented the following topics for consideration:

- Restructured meat
- Hot processing
- Spray chilling of poultry
- Chlorine byproducts in meat and poultry plants from recycle/reuse of in-plant water
- Irradiation of meat and poultry products
- Aseptic packaging
- Antemortem inspection alternatives
- Rapid analytical methods
- High technology
- Genetic engineering
- Alternative uses for animal byproducts
- Meat-fish combination products
- Inspection program for seafood
- Inspection program for domesticated rabbits
- Inspection program for other species of birds
- Ethnic foods

At the June meeting of TASC, brief issue papers prepared by TTA on each of the above subjects were discussed. TASC decided that some of the topics were being adequately addressed through other channels and therefore required no action by the Steering Committee. TASC requested that TTA prepare additional papers on Hot Processing, Rapid Analytical Methods, and Restructured Meat, identifying some possible impacts of the technology, and approaches for assessment.

III. Subjects Monitored and Assessed

TTA monitored several technological developments with potential impact on the Agency during the past year. To develop information on these issues, TTA searched the literature, attended technical conferences, contacted experts at monitoring stations, and sponsored technical seminars for FSIS. Most of these topics were presented to TASC in issue papers for consideration, and several were also covered in MOSS articles.

Restructured Meat

Meat restructuring is a process that converts boneless low-grade meat to a higher-value meat product by first flaking, chopping, or sectioning, followed by blending and reforming. Widespread introduction of restructured meat could have a significant impact on FSIS in the areas of product standards and labeling. Therefore, TTA has continued to monitor refinements in the technology which could make restructured meat more acceptable to consumers.

TTA developed a proposal on restructured meat for TASC in FY 1983. During FY 1984, TTA consulted extensively on restructured meat with experts at monitoring stations, and prepared a paper for TASC addressing some of the implications of the technology, as well as a possible approach for assessment.

Restructured meat and other processed products could possibly include ingredients such as surimi (a minced and washed fish protein product), or animal proteins such as blood and bone. Therefore, TTA also followed technological developments related to these potential ingredients.

Slaughter and Processing Operations

TTA has been following developments in equipment and procedures for meat and poultry production. Changes in operations may require modifications in FSIS regulations and inspection procedures. TTA assessed the significance of issues such as hot processing, spray chilling of poultry, and water chlorination.

Hot processing involves boning carcasses shortly after slaughter, rather than after the conventional chilling period. This technique could result in energy savings for the industry. TTA prepared a proposal for TASC in FY 1983, identifying possible issues associated with hot processing, such as microbial safety. In FY 1984, TTA prepared a paper for TASC discussing possible hindrances on implementation of hot processing by industry, and potential areas of concern to FSIS.

Hot processed meat may be tenderized by prerigor pressurization, which uses pressure, temperature and time parameters. Delayed exsanguination, or delayed bleeding of the animal after slaughter, is another technique that may have a desirable effect on meat. Adoption of these techniques might require revisions in FSIS inspection procedures.

Water use and conservation is important in meat and poultry operations. Water can be recycled or reused in plant operations if it is treated to reduce microbial contamination. Chlorine is frequently used to sanitize water in meat and poultry plants; however, there is some concern with the safety of organic compounds formed in chlorinated processing water.

Spray chilling of poultry involves spraying carcasses with water as they are conveyed through the chiller, as opposed to air chilling or counter flow immersion. This method might reduce carcass contamination by *Salmonella* and *Campylobacter*, while maintaining current yield.

Food Irradiation

This subject generated a great deal of interest, following publication in February 1984 of FDA's proposal to permit low-dose irradiation of fruits and vegetables for disinfestation and sprout inhibition. Although the proposal did not address irradiation of meat and poultry (e.g., for trichinae control in pork), FDA's action may clear the way for consideration of other applications of the technology. Therefore, it became imperative that TTA gather and assess information on this issue for the Agency.

TTA finalized program arrangements for a Symposium on Food Irradiation, which was held early in FY 1985. It was co-sponsored by TTA and the FSIS Continuing Education Food Science and Technology Program.

TTA's Director is a member of the recently formed FSIS Irradiation Task Force, which is chaired by the Deputy Administrator of Science.

Packaging Innovations

TTA has been monitoring several food packaging technologies. In aseptic packaging, the product and container are sterilized separately and brought together in a sterile environment. Currently, most commercial applications are for homogeneous products, but the technology is developing for processing particulate products, including products regulated by FSIS. A TTA staff member visited Brik-Pak's new facility in Denton, Texas, the first U.S. plant to produce aseptic packaging films. TTA also gathered information on vacuum packaging, retort pouches, and semirigid retortable plastic containers.

Rapid Analytical Tests

FSIS is interested in technology that will lead to tests that could be performed more rapidly than the laboratory methods presently used, or tests that could be conducted by inspectors on-line. TTA collected information on screening procedures that use blood or other body fluids. Potential techniques using monoclonal antibodies, enzyme electrodes, or DNA probes were identified. TTA studied innovations that would enable rapid determination of diseases, residues, and species identity.

High Technology

High technology includes developments in robotics, computer vision, lasers, and ultrasound. Some members of the food industry have already begun to adopt these technologies for production and quality control. TTA has been studying possible applications to meat and poultry production and inspection.

In FY 1983, TTA prepared a technology assessment proposal on high technology for TASC. TTA continued to gather and assess information on this subject during FY 1984. Innovations studied include robotic carcass stripping, video inspection, and laser and ultrasonic detection of packaging defects.

A paper TTA prepared for TASC on Rapid Analytical Methods discussed some high technology applications for rapid screening and automated laboratory analyses, such as computer imaging and robotic sample preparation.

Genetic Engineering

Genetic engineering is a developing technology with several possible implications for FSIS in terms of residues, inspection procedures, and product standards. Genetic engineering involves alteration of the hereditary material of a living cell to perform specific functions.

Hormones or enzymes produced by genetically-engineered bacteria could be used in food animal production or as ingredients in meat and poultry products. Genetic engineering could be used to develop vaccines or reagents for immunoassays. Furthermore, gene transfer may enable the production of modified food animal species, as well as larger or faster-growing animals.

Possible Inspection Programs for Other Species

Currently, FSIS is responsible for inspecting cattle, sheep, swine, goats, equines, and domesticated poultry. The Agency inspects other species, such as buffalo, rabbit, and quail, on a voluntary basis. The National Marine Fisheries Service performs voluntary inspection of marine and freshwater fish.

Projected increased consumption of fish, and of other species not presently covered, has led to support for mandatory Federal inspection of such species. A bill presented in Congress in FY 1984 proposed mandatory fish inspection. Furthermore, groups such as the American rabbit industry believe Federal inspection would increase consumption of their products. In light of these developments, TTA began considering potential impacts on FSIS in terms of developing inspection procedures and training inspectors.

Assessment Methodologies

TTA has been compiling information on assessment procedures for use in assessing the impacts of new technologies on FSIS. Such methods offer useful tools, but frequently must be modified to fit the specific requirements of a TTA study. TTA attempts to remain flexible in its assessment approaches, since projects may vary in complexity, the nature of the subject, the purpose and scope of the study, the time frame for planning, and the time frame for completion.

TTA contacted the National Science Foundation and MITRE Corporation regarding the method developed by MITRE to identify candidate technologies for assessment and to decide if a comprehensive technology assessment would be useful. TTA staff members participated as observers at various advisory group meetings of the Office of Technology Assessment.

Copies of MOSS, seminar videotapes, and other information mentioned in this report may be obtained by contacting the Technology Transfer and Assessment Staff. The mailing address is:

USDA/FSIS/TTA
Room 4911 South Building
Washington, DC 20250
Telephone (202) 447-8623

Appendices

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Phosphates and Protein Applications	William Swartz Manager, Meat Industry Food Ingredients Div. Stauffer Chemical Company	11/83
*Consumers' Concerns about Food Safety	Timothy Hammonds Vice President Food Marketing Institute	12/83
*Dosimetry of Foreign Molecules Via Binding to Blood Proteins	Steven Tannebaum Professor, Toxicology and Food Chemistry Massachusetts Institute of Technology	1/84
*Infrared Thermometry and Infrared Thermography and their Potential Application in Meat and Poultry Inspection	Charles Everest Everest Interscience	2/84
*Beef-a-Matic	Suzanne LeRoy Newark Professional Center	
*Use of Automated Vision Inspection Systems	Proman, AB, Sweden	2/84
*Animal Drug Implant Systems	George Gagliardi Arthur D. Little Inc. Cambridge, MA	3/84
*Applications of Food Technology from the Space Program	Robert Langer Professor Massachusetts Institute of Technology	4/84
*Recent Trends in Food Preservation-- with Emphasis on Activity of Water and Controlled Atmosphere Packaging	Richard Sauer Program Manager Space Food Systems Johnson Space Center	5/84
Workshop on the Creative Process	Constantine Genigeorgis Univ. of California-Davis	5/84
*Videotapes available for borrowing in 3/4 inch, VHS, or Beta format.	Ken Baker American University	8/84

MONITORING STATIONS - DOMESTIC

ABC Research, Gainesville, FL
Alaco Division of New Zealand Milk Products, Petaluma, CA
American Meat Institute, Washington, DC
American Meat Science Association, Chicago, IL
APHIS Emergency Programs Information Center, Hyattsville, MD
Agricultural Research Service, Beltsville, MD
University of Arkansas, Fayetteville, AR
Armour Research Center, Scottsdale, AZ
Auburn University, Auburn, AL
Automation Industrial Control, Inc., Baltimore, MD
University of California, Berkeley, CA
University of California, Davis, CA
Catholic University of America, Washington, DC
CH2M Hill, Albuquerque, NM
Clemson University, Clemson, SC
Colorado State University, Fort Collins, CO
Department of Commerce, Office of Productivity, Technology, and
Innovation, Washington, DC
Cooperative States Research Service, Washington, DC
Cornell University, Ithaca, NY
Council on Agricultural Science and Technology, Ames, IA
Curwood, Inc., New London, WI
The East-West Center, Honolulu, HI
Everest Interscience, Anaheim, CA
Food and Drug Administration, Washington, DC
Food and Drug Administration, Rockville, MD
University of Florida, Gainesville, FL
FMC Inc., Princeton, NJ
Food Marketing Institute, Washington, DC
University of Georgia, Athens, GA
Grocery Manufacturers of America, Washington, DC
Hanover Brands, Inc., Hanover, PA
Harvard University, Cambridge, MA
University of Hawaii, Honolulu, HI
University of Illinois, Urbana-Champaign, IL
Iowa State University, Ames, IA
Kansas State University, Manhattan, KS
Koppens Industries, Stone Mountain, GA
Arthur D. Little, Inc., Cambridge, MA
Le Fiell Company, San Francisco, CA
University of Maryland, Center for Automation Research,
College Park, MD
University of Massachusetts, Amherst, MA
Massachusetts Institute of Technology, Cambridge, MA
Meat Animal Research Center, Clay Center, NE
Michigan State University, East Lansing, MI
University of Michigan, Ann Arbor, MI

University of Minnesota, St. Paul, MN
Natick Labs, Boston, MA
National Aeronautics and Space Administration (NASA), Washington, DC
National Aeronautics and Space Administration (NASA), Cape Canaveral, FL
National Broiler Council, Washington, DC
National Bureau of Standards, Data Management, Gaithersburg, MD
National Food Processors Association, Berkeley, CA
National Food Processors Association, Washington, DC
National Marine Fisheries Service, Washington, DC
National Live Stock and Meat Board, Chicago, IL
National Pork Producers Council, Des Moines, IA
National Science Foundation, Washington, DC
University of Nebraska, Lincoln, NE
North Carolina State University, Raleigh, NC
North Dakota State University, Fargo, ND
Northwest and Alaska Fisheries Center, Seattle, WA
Office of Economic Cooperation and Development, Washington, DC
Office of Technology Assessment, Washington, DC
Ohio State University, Columbus, OH
University of Pennsylvania, Philadelphia, PA
Penn State University, University Park, PA
Russell Research Center, Athens, GA
Rutgers, the State University, New Brunswick, NJ
Southern Regional Research Center, New Orleans, LA
Stauffer Chemical Company, Washington, PA
Syracuse University, Syracuse, NY
Temple University, Philadelphia, PA
University of Tennessee, Knoxville, TN
Texas A&M University, College Station, TX
USDA/ARS/Eastern Regional Research Center, Philadelphia, PA
USDA/ARS/Western Regional Research Center, Berkeley, CA
University of Vermont, Burlington, VT
Virginia Polytechnic Institute, Blacksburg, VA
University of Washington, Seattle, WA
Washington State University, Pullman, WA
Westreco, Inc., New Milford, CT
University of Wisconsin, Madison, WI
University of Wyoming, Laramie, WY
Zymark, Inc., Boston, MA

MONITORING STATIONS - INTERNATIONAL

Australia

CSIRO Meat Research Laboratory, Queensland

Canada

University of Guelph, Guelph, Ontario
Ministry of Agriculture, Food Production and
Inspection Branch, Guelph, Ontario

Denmark

Atlas Company, Copenhagen
Danish Meat Products Laboratory
Danish Meat Research Institute, Roskilde
Danish Research Institute for Poultry Processing, Hillerod
Ministry of Agriculture, Copenhagen
Ministry of Environment, Copenhagen
NOVO, Copenhagen
Technical University of Denmark,

England

Food Research Institute, Norfolk
Meat Research Institute, Bristol
Meat and Livestock Commission, Bletchley
Ministry of Agriculture, Fisheries, and Food, Norwich
Tesco, Ltd.,

France

Laboratory Central d'Hygiène Alimentaire, Paris
Station Experimentale d'Aviculture, Ploufragan

Germany

Federal Center for Meat Research, Kulmbach

Japan

Ministry of Health and Welfare, Tokyo

The Netherlands

Meyn B.V., Oostzaan
Spelderholt Institute for Poultry Research, Beekbergen
Stork, PMT B.V., Beekbergen

New Zealand

Meat Industry Research Institute, Hamilton

Conferences Attended in FY 1984

First Quarter

Capitalizing on Aseptic (NFPA Conference), Washington, DC
FSIS-CE Symposium on Risk Assessment, Arlington, VA
Illinois Institute of Technology Workshop on Machine Vision
Applied to Robotics, Washington, DC
Institute of Food Technologists Eastern Food Science and
Technology Conference, Lancaster, PA (food irradiation,
packaging)
International Symposium on Radiation Disinfestation of Food,
Honolulu, HI
National Food Processors Association Eastern Research
Highlights Conference, Washington, DC
(rapid test methods, thermal processing)
Western Regional Packaging Forum, Anaheim, CA
(packaging, high technology)

Second Quarter

ABC Research Technical Seminar, Gainesville, FL
(restructured meat, biotechnology)
Annual Meat Science Institute, Athens, GA
(restructured meat, hot processing, surimi, rapid test methods,
technology assessment)
Industrial Technology Exposition, Washington, DC
(robotics, imaging)
National Food Processors Association Annual Convention, Washington, DC
(packaging, surimi, irradiation)
Pittsburgh Conference, Atlantic City, NJ
(rapid test methods)
Science, Technology, and Public Policy (OPM Course), Denver, CO
(biotechnology, technology assessment)

Third Quarter

The Engineering Foundation Conference on Irradiation for Food Use,
Easton, MD
Fifth Annual Chlorination Conference, Williamsburg, VA
Food 1984, Orlando, FL
(irradiation, packaging, surimi)
Institute of Food Technologists Annual Meeting, Anaheim, CA
(rapid test methods, microbiology, immunology)
International Association for Impact Assessment Annual Meeting,
New York, NY
Memorandum of Understanding Meeting with The Netherlands,
Washington, DC (rapid tests for residue detection)

Research and Development Associates Meeting, Chicago, IL
(irradiation, biotechnology, packaging)
Second National Food Protection Conference, Washington, DC
(rapid methods, genetic engineering, risk assessment)
Tech Ex '84 International Exhibition, Orlando, FL
(robotics, machine vision, rapid test methods)
USDA Information Technology Center Seminar on Artificial
Intelligence, Washington, DC

Fourth Quarter

American Meat Institute (AMI) Convention, New Orleans, LA
(restructured meat, hot processing, robotics, forecasting)
AMI Meat Industry Research Conference, New Orleans, LA
(restructured meat, irradiation, packaging, rapid test methods)
European Meeting of Meat Research Workers, Bristol, UK
(hot processing, restructured meat, visual imaging, blood protein)
Federation of Analytical Chemists and Spectroscopy Societies,
Philadelphia, PA (rapid test methods)
House Science and Technology Subcommittee on Energy Research
Hearing on Food Irradiation, Washington, DC
Iowa State University Sausage and Processed Meats Short Course,
Ames, IA (restructured meat, hot processing)
Poultry Science Association Annual Convention, Guelph, Ontario, Canada
(spray chilling, poultry production)
Robotics International Chapter Meeting on Technology Assessment
of Robotics in the Workplace, Rockville, MD

DISCLAIMER

The Office of the Administrator, FSIS, approves the release of this report, which documents the accomplishments of TTA during FY 1984 and defines its present role in the Agency. Approval does not signify that the contents necessarily reflect the views and policies of the Food Safety and Inspection Service, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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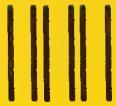


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